

# MODEL CHAPTER FOR TEXTBOOKS

# IMCI

## Integrated Management of Childhood Illness



World Health Organization  
Department of Child and Adolescent Health  
and Development (CAH)



Unicef





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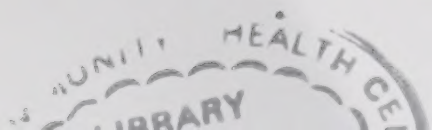


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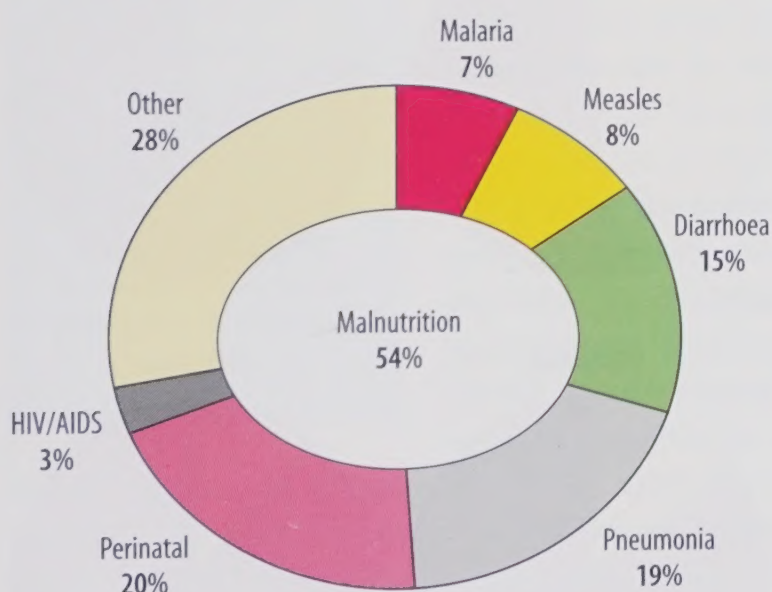
# Integrated Management of Childhood Illness

## The inequities of child health

Although the annual number of deaths among children less than 5 years old has decreased by almost a third since the 1970s, this reduction has not been evenly distributed throughout the world. According to the 1999 *World Health Report*, children in low- to middle-income countries are 10 times more likely to die before reaching age 5 than children living in the industrialised world. In 1998, more than 50 countries still had childhood mortality rates of over 100 per 1,000 live births.<sup>1</sup>

Every year more than 10 million children in these countries die before they reach their fifth birthday. Seven in 10 of these deaths are due to acute respiratory infections (mostly pneumonia), diarrhoea, measles, malaria, or malnutrition—and

**Figure 1. Distribution of 10.5 million deaths among children less than 5 years old in all developing countries, 1999**



<sup>1</sup> World Health Organization. *World health report 1999 making a difference*. Geneva, WHO, 1999.

<sup>2</sup> Murray CJL and Lopez AD. *The global burden of disease: a comprehensive assessment of mortality and disability from diseases injures, and risk factors in 1990 and projected to 2020*. Geneva, World Health Organization, 1996.

<sup>3</sup> World Health Organization. *Report of the Division of Child Health and Development 1996–1997*. Geneva, WHO, 1998.

often to a combination of these conditions (Figure 1).

Projections based on the 1996 analysis *The Global Burden of Disease*<sup>2</sup> indicate that these conditions will continue to be major contributors to child deaths through the year 2020 unless significantly greater efforts are made to control them.

Infant and childhood mortality are sensitive indicators of inequity and poverty. It is no surprise to find that the children who are most commonly and severely ill, who are malnourished and who are most likely to die of their illness are those of the most vulnerable and underprivileged populations of low-income countries. However, even within middle-income and so-called industrialised countries, there are often neglected geographical areas where childhood mortality remains high. Millions of children in these areas are often caught in the vicious cycle of poverty and ill health—poverty leads to ill health and ill health breeds poverty.

Quality of care is another important indicator of inequities in child health. Every day, millions of parents seek health care for their sick children, taking them to hospitals, health centres, pharmacists, doctors, and traditional healers. Surveys reveal that many sick children are not properly assessed and treated by these health providers, and that their parents are poorly advised.<sup>3</sup> At first-level health facilities in low-income countries, diagnostic supports such as radiology and laboratory services are minimal or non-existent, and drugs and equipment are often scarce. Limited supplies and equipment, combined with an irregular flow of patients, leave doctors at this level with few opportunities to practise complicated clinical procedures. Instead, they often rely on history and signs and symptoms to determine a course of management that makes the best use of available resources.

Providing quality care to sick children in these conditions is a serious challenge. Yet how can this situation be reversed? Experience and scientific



Improvements in child health are not necessarily dependent on the use of sophisticated and expensive technologies.

evidence show that improvements in child health are not necessarily dependent on the use of sophisticated and expensive technologies, but rather on effective strategies that are

based on a holistic approach, are available to the majority of those in need, and which take into account the capacity and structure of health systems, as well as traditions and beliefs in the community.

### Rationale for an evidence-based syndromic approach to case management

Many well-known prevention and treatment strategies have already proven effective for saving young lives. Childhood vaccinations have successfully reduced deaths due to measles. Oral rehydration therapy has contributed to a major reduction in diarrhoea deaths. Effective antibiotics have saved millions of children with pneumonia. Prompt treat-

ment of malaria has allowed more children to recover and lead healthy lives. Even modest improvements in breastfeeding practices have reduced childhood deaths.

While each of these interventions has shown great success, accumulating evidence suggests that a more integrated approach to managing sick children is needed

to achieve better outcomes. Child health programmes need to move beyond single diseases to addressing the overall health and well-being of the child. Because many children present with overlapping signs and symptoms of diseases, a single diagnosis can be difficult, and may not be feasible or appropriate. This is especially true for first-level health facilities where examinations involve few instruments, little or no laboratory tests, and no X-ray.

A more integrated approach to managing sick children is needed to achieve better outcomes.

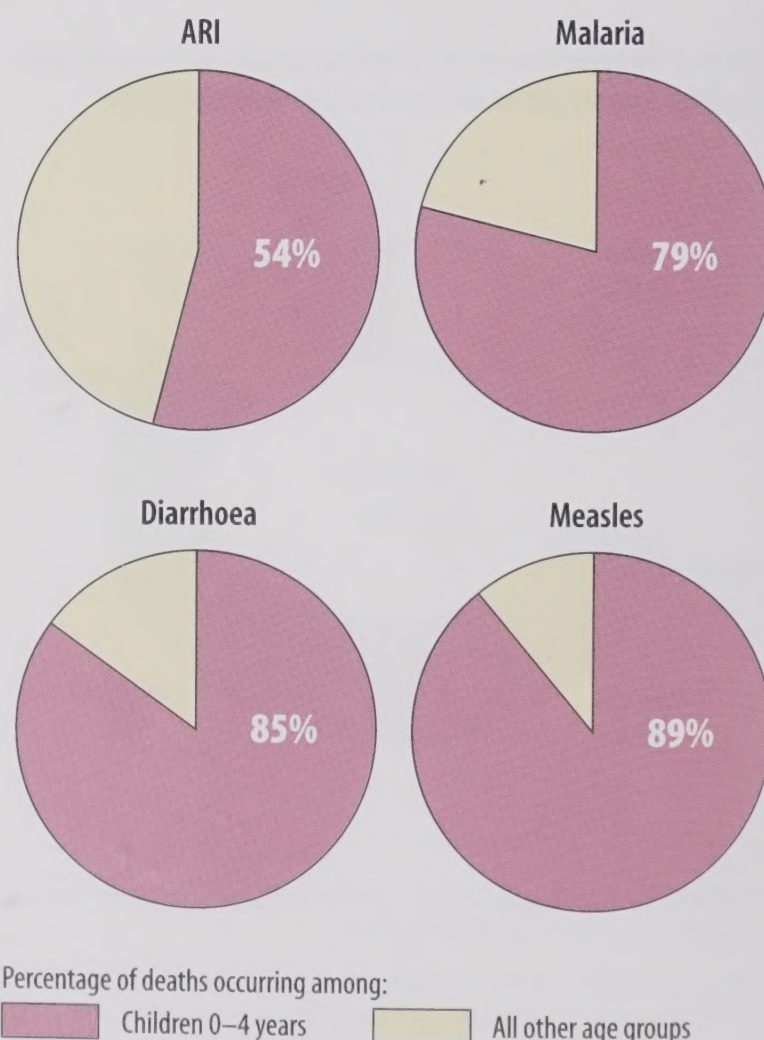
Child health programmes need to move beyond addressing single diseases to addressing the overall health and well-being of the child.

During the mid-1990s, the World Health Organization (WHO), in collaboration with UNICEF and many other agencies, institutions and individuals, responded to this challenge by developing a strategy known as the Integrated Management of Childhood Illness (IMCI). Although the major reason for developing the IMCI strategy stemmed from the needs of curative care, the strategy also addresses aspects of nutrition, immunization, and other important elements of disease prevention and health promotion. The objectives of the strategy are to reduce death and the frequency and severity of illness and disability, and to contribute to improved growth and development.

The IMCI clinical guidelines target children less than 5 years old—the age group that bears the highest burden of deaths from common childhood diseases (Figure 2).

The guidelines take an evidence-based, syndromic approach to case management that supports the rational, effective and affordable use of drugs and

**Figure 2. Proportion of Global Burden of Selected Diseases Borne by Children Under 5 Years (Estimated, Year 2000)<sup>4</sup>**



<sup>4</sup> Adapted from Murray and Lopez, 1996.



diagnostic tools. Evidence-based medicine stresses the importance of evaluation of evidence from clinical research and cautions against the use of intuition, unsystematic clinical experience, and untested pathophysiologic reasoning for medical decision-making.<sup>5</sup> In situations where laboratory support and clinical resources are limited, the syndromic approach is a more realistic and cost-effective way to manage patients. Careful and systematic assessment of common symptoms and well-selected clinical signs provides sufficient information to guide rational and effective actions.

An evidence-based syndromic approach can be used to determine the:

- Health problem(s) the child may have;
- Severity of the child's condition;
- Actions that can be taken to care for the child (e.g. refer the child immediately, manage with available resources, or manage at home).

In addition, IMCI promotes:

- Adjustment of the curative interventions to the capacity and functions of the health system; and
- Active involvement of family members and the community in the health care process.

Careful and systematic assessment of common symptoms and well-selected specific clinical signs provide sufficient information to guide rational and effective actions.

Parents, if correctly informed and counselled, can play an important role in improving the health status of their children by following the advice given by a health care provider, by applying appropriate feeding practices and by bringing sick children to a

doctor as soon as symptoms arise. A critical example of the need for timely care is Africa, where approximately 80 percent of childhood deaths occur at home, before the child has any contact with a health facility.<sup>6</sup>

## Components of the integrated approach

The IMCI strategy includes both preventive and curative interventions that aim to improve practices in health facilities, the health system and at home. At the core of the strategy is integrated case management of the most common childhood problems with a focus on the most common causes of death.

The strategy includes three main components:

- Improvements in the case-management skills of health staff through the provision of locally-adapted guidelines on integrated management of childhood illness and activities to promote their use;
- Improvements in the overall health system required for effective management of childhood illness;
- Improvements in family and community health care practices.

## The principles of integrated care

The IMCI guidelines are based on the following principles:

- All sick children must be examined for "**general danger signs**" which indicate the need for immediate referral or admission to a hospital.
- All sick children must be **routinely assessed for major symptoms** (for children age 2 months up to 5 years: cough or difficult breathing, diarrhoea, fever, ear problems; for young infants age 1 week up to 2 months: bacterial infection and diarrhoea). They must also be routinely assessed for **nutritional and immunization status, feeding problems, and other potential problems**.
- Only a **limited number of carefully-selected clinical signs** are used, based on evidence of their sensitivity and specificity<sup>7</sup> to detect disease.

<sup>7</sup> Sensitivity and specificity measure the diagnostic performance of a clinical sign compared with that of the gold standard, which by definition has a sensitivity of 100% and a specificity of 100%. Sensitivity measures the proportion or percentage of those with the disease who are correctly identified by the sign. In other words, it measures how sensitive the sign is in detecting the disease. (Sensitivity = true positives / [true positives + false negatives]) Specificity measures the proportion of those without the disease who are correctly called free of the disease by using the sign. (Specificity = true negatives / [true negatives + false positives])

<sup>5</sup> Chessare JB. Teaching clinical decision-making to pediatric residents in an era of managed care. *Paediatrics*, 1998, 101 (4 Pt): 762-766

<sup>6</sup> Oluwale D et al. Management of childhood illness in Africa. *British medical journal*, 1999, 320:594-595.



These signs were selected considering the conditions and realities of first-level health facilities.

- A combination of individual signs leads to a child's **classification(s) rather than a diagnosis**. Classification(s) indicate the severity of condition(s). They call for specific actions based on whether the child (a) should be urgently referred to another level of care, (b) requires specific treatments (such as antibiotics or anti-malarial treatment), or (c) may be safely managed at home. The **classifications are colour coded**: "pink" suggests hospital referral or admission, "yellow" indicates initiation of treatment, and "green" calls for home treatment.
- The IMCI guidelines address **most, but not all, of the major reasons a sick child is brought to a clinic**. A child returning with chronic problems or less common illnesses may require special care. The guidelines do not describe the management of trauma or other acute emergencies due to accidents or injuries.
- IMCI management procedures use a **limited number of essential drugs and encourage active participation of caretakers in the treatment** of children.
- An essential component of the IMCI guidelines is the **counselling of caretakers** about home management, including counselling about feeding, fluids and when to return to a health facility.

### Adapting the guidelines to a country's situation

The underlying principles of the IMCI guidelines are constant. However, in each country the IMCI clinical guidelines should be adapted to:

- Cover the most serious childhood illnesses typically seen at first-level health facilities;
- Make the guidelines consistent with national treatment guidelines and other policies; and
- Make IMCI implementation feasible through the health system and by families caring for their children at home.

Adaptation of the IMCI guidelines normally is coordinated by a national health regulating body (e.g.,

Ministry of Health) and incorporates decisions carefully made by national health experts. For this reason, some clinical signs and details of clinical procedures described below may differ from those used in a particular country. The principles used for management of sick children, however, are fully applicable in all situations.

### The IMCI case management process

The case management of a sick child brought to a first-level health facility includes a number of important elements (see Figure 3).

#### Outpatient health facility

- Assessment;
- Classification and identification of treatment;
- Referral, treatment or counselling of the child's caretaker (depending on the classification(s) identified);
- Follow-up care.

#### Referral health facility

- Emergency triage assessment and treatment (ETAT);
- Diagnosis, treatment and monitoring of patient progress.

#### Appropriate home management

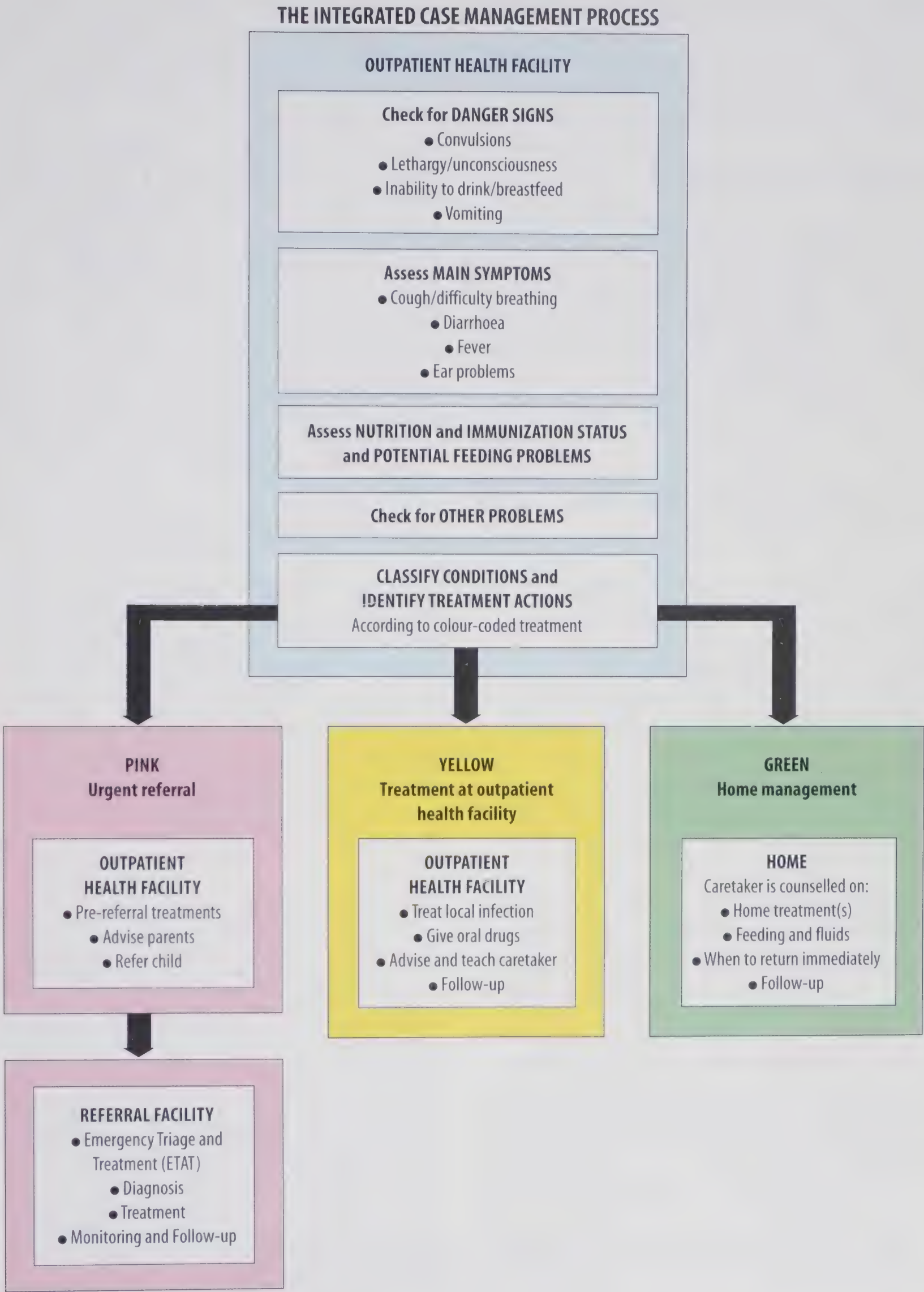
- Teaching the mother or other caretaker how to give oral drugs and treat local infections at home;
- Counselling the mother or other caretaker about food (feeding recommendations, feeding problems); fluids; when to return to the health facility; and her own health.

Depending on a child's age, various clinical signs and symptoms have different degrees of reliability and diagnostic value and importance. Therefore, the IMCI guidelines recommend case management procedures based on two age categories:

- Children age 2 months up to 5 years
- Young infants age 1 week up to 2 months



Figure 3. IMCI case management in the outpatient health facility, first-level referral facility and at home for the sick child from age 2 months up to 5 years





# Outpatient management of children age 2 months up to 5 years

## Assessment of sick children

The assessment procedure for this age group includes a number of important steps that must be taken by the health care provider, including: (1) history taking and communicating with the caretaker about the child's problem; (2) checking for general danger signs; (3) checking main symptoms; (4) checking nutritional status; (5) assessing the child's feeding; (6) checking immunization status; and (7) assessing other problems.

### History taking – communicating with the caretaker

ASSESSMENT OF SICK CHILD	History taking	<input checked="" type="checkbox"/>
	General danger signs	<input type="checkbox"/>
	Main symptoms	<input type="checkbox"/>
	Cough or difficult breathing	<input type="checkbox"/>
	Diarrhoea	<input type="checkbox"/>
	Fever	<input type="checkbox"/>
	Ear problems	<input type="checkbox"/>
	Nutritional status	<input type="checkbox"/>
	Immunization status	<input type="checkbox"/>
Other problems	<input type="checkbox"/>	

It is critical to communicate effectively with the child's mother or caretaker. Good communication techniques and an integrated assessment are required to ensure that common problems or signs of disease or malnutrition are not overlooked. Using good communication helps to reassure the mother or caretaker that the child will receive good care. In addition, the success of home treatment depends on how well the mother or caretaker knows how to give the treatment and understands its importance.

The steps to good communication are:

- **Listen carefully to what the caretaker says.** This will show her/him that you take their concerns seriously.

- **Use words the caretaker understands.** Try to use local words and avoid medical terminology.
- **Give the caretaker time to answer questions.** S/he may need time to reflect and decide if a clinical sign is present.
- **Ask additional questions when the caretaker is not sure about the answer.** A caretaker may not be sure if a symptom or clinical sign is present. Ask additional questions to help her/him give clear answers.

### Checking for general danger signs

ASSESSMENT OF SICK CHILD	History taking	<input type="checkbox"/>
	General danger signs	<input checked="" type="checkbox"/>
	Main symptoms	<input type="checkbox"/>
	Cough or difficult breathing	<input type="checkbox"/>
	Diarrhoea	<input type="checkbox"/>
	Fever	<input type="checkbox"/>
	Ear problems	<input type="checkbox"/>
	Nutritional status	<input type="checkbox"/>
	Immunization status	<input type="checkbox"/>
Other problems	<input type="checkbox"/>	

A sick child brought to an outpatient facility may have signs that clearly indicate a specific problem. For example, a child may present with chest in-drawing and cyanosis, which indicate severe pneumonia. However, some children may present with serious, non-specific signs called "general danger signs" that do not point to a particular diagnosis. For example, a child who is lethargic or unconscious may have meningitis, severe pneumonia, cerebral malaria or another severe disease. Great care should be taken to ensure that these general danger signs are not overlooked because they suggest that a child is severely ill and needs urgent attention.



The following danger signs should be routinely checked in all children.

- **The child has had convulsions during the present illness.** Convulsions may be the result of fever. In this instance, they do little harm beyond frightening the mother. On the other hand,



convulsions may be associated with meningitis, cerebral malaria or other life-threatening conditions. All children who have had convulsions during the present illness should be considered seriously ill.

- **The child is unconscious or lethargic.** An unconscious child is likely to be seriously ill. A lethargic child, who is awake but does not take any notice of his or her surroundings or does not respond normally to sounds or movement, may also be very sick. These signs may be associated with many conditions.
- **The child is unable to drink or breastfeed.** A child may be unable to drink either because s/he is too weak or because s/he cannot swallow. Do not rely completely on the mother’s evidence for this, but observe while she tries to breastfeed or to give the child something to drink.
- **The child vomits everything.** The vomiting itself may be a sign of serious illness, but it is also important to note because such a child will not be able to take medication or fluids for re-hydration.

If a child has **one or more** of these signs, s/he must be considered **seriously ill** and will almost always need referral. In order to start treatment for severe illnesses without delay, the child should be quickly assessed for the most important causes of serious illness and death—acute respiratory infection (ARI), diarrhoea, and fever (especially associated with malaria and measles). A rapid assessment of nutritional status is also essential, as malnutrition is another main cause of death.

Checking main symptoms

After checking for general danger signs, the health care provider must check for main symptoms. The

generic IMCI clinical guidelines suggest the following four: (1) cough or difficult breathing; (2) diarrhoea; (3) fever; and (4) ear problems.

The first three symptoms are included because they often result in death. Ear problems are included because they are considered one of the main causes of childhood disability in low- and middle-income countries.

Cough or difficult breathing

ASSESSMENT OF SICK CHILD

History taking ☐

General danger signs ☐

Main symptoms ☒

Cough or difficult breathing ☒

Diarrhoea ☐

Fever ☐

Ear problems ☐

Nutritional status ☐

Immunization status ☐

Other problems ☐

A child presenting with cough or difficult breathing should first be assessed for general danger signs. This child may have pneumonia or another severe respiratory infection. After checking for danger signs, it is essential to ask the child’s caretaker about this main symptom.

Clinical assessment

Three key clinical signs are used to assess a sick child with cough or difficult breathing:

- **Respiratory rate**, which distinguishes children who have pneumonia from those who do not;
- **Lower chest wall indrawing**, which indicates severe pneumonia; and
- **Stridor**, which indicates those with severe pneumonia who require hospital admission.

No single clinical sign has a better combination of sensitivity and specificity to detect pneumonia in children under 5 than **respiratory rate, specifically fast breathing**. Even auscultation by an expert is less sensitive as a single sign.

Cut-off rates for fast breathing (the point at which fast breathing is considered to be fast) depend on the child’s age. Normal breathing rates are higher



in children age 2 months up to 12 months than in children age 12 months up to 5 years.

Child's age	Cut-off rate for fast breathing
2 months up to 12 months	50 breaths per minute or more
12 months up to 5 years	40 breaths per minute or more

**Note:** The specificity of respiratory rate for detecting pneumonia depends on the prevalence of bacterial pneumonia among the population. In areas with high levels of viral pneumonia, respiratory rate has relatively modest specificity. Nevertheless, even if the use of respiratory rate leads to some overtreatment, this will still be small compared with the current use of antibiotics for all children with an ARI, as occurs in many clinics.

**Lower chest wall indrawing**, defined as the inward movement of the bony structure of the chest wall with inspiration, is a useful indicator of severe pneumonia. It is more specific than “intercostal indrawing,” which concerns the soft tissue between the ribs without involvement of the bony structure of the chest wall.<sup>8</sup> Chest indrawing should only be considered present if it is *consistently present in a calm child*. Agitation, a blocked nose or breastfeeding can all cause temporary chest indrawing.

**Stridor** is a harsh noise made when the child inhales (breathes *in*). Children who have stridor when calm have a substantial risk of obstruction and should be referred. Some children with mild croup have stridor only when crying or agitated. This should not be the basis for indiscriminate referral. Sometimes a wheezing noise is heard when the child exhales (breathes *out*). This is not stridor. A wheezing sound is most often associated with asthma. Experience suggests that even where asthma rates are high, mortality from asthma is relatively uncommon. In some cases, especially when a child has wheezing when exhaling, the final decision on presence or absence of fast breathing can be made after a test with a rapid acting bronchodilator (if available). At this level, no distinction is made between children with bronchiolitis and those with pneumonia.

<sup>8</sup> Mulholland EK et al. Standardized diagnosis of pneumonia in developing countries. *Pediatric infectious disease journal*, 1992, 11:77–81.

Classification of cough or difficult breathing

Based on a combination of the above clinical signs, children presenting with cough or difficult breathing can be classified into three categories:

- Those who require referral for possible **severe pneumonia or very severe disease**.

This group includes children with any general danger sign, or lower chest indrawing or stridor when calm. Children with **severe pneumonia or very severe disease** most likely will have invasive bacterial organisms and diseases that may be life-threatening. This warrants the use of injectable antibiotics.

● Any general danger sign or ● Chest indrawing or ● Stridor in calm child	SEVERE PNEUMONIA OR VERY SEVERE DISEASE
---	---

- Those who require antibiotics as outpatients because they are highly likely to have bacterial pneumonia.

This group includes all children with fast respiratory rate for age. Fast breathing, as defined by WHO, detects about 80 percent of children with pneumonia who need antibiotic treatment. Treatment based on this classification has been shown to reduce mortality.<sup>9</sup>

● Fast breathing	PNEUMONIA
------------------	-----------

- Those who simply have a **cough or cold** and do not require antibiotics.

Such children may require a safe remedy to relieve cough. A child with cough and cold normally improves in one or two weeks. However, a child with chronic cough (more than 30 days) needs to be further assessed (and, if needed, referred) to exclude tuberculosis, asthma, whooping cough or another problem.

● No signs of pneumonia or very severe disease	NO PNEUMONIA: COUGH OR COLD
--	--------------------------------

<sup>9</sup> Sazawal S, Black RE. Meta-analysis of intervention trials on case management of pneumonia in community settings. *Lancet*, 1992, 340(8818):528–533.



Diarrhoea

ASSESSMENT OF SICK CHILD

History taking	<input type="checkbox"/>
General danger signs	<input type="checkbox"/>
Main symptoms	<input checked="" type="checkbox"/>
Cough or difficult breathing	<input type="checkbox"/>
Diarrhoea	<input checked="" type="checkbox"/>
Fever	<input type="checkbox"/>
Ear problems	<input type="checkbox"/>
Nutritional status	<input type="checkbox"/>
Immunization status	<input type="checkbox"/>
Other problems	<input type="checkbox"/>

A child presenting with diarrhoea should first be assessed for general danger signs and the child’s caretaker should be asked if the child has cough or difficult breathing.

Diarrhoea is the next symptom that should be routinely checked in **every child** brought to the clinic. A child with diarrhoea may have three potentially lethal conditions: (1) acute watery diarrhoea (including cholera); (2) dysentery (bloody diarrhoea); and (3) persistent diarrhoea (diarrhoea that lasts more than 14 days). All children with diarrhoea should be assessed for: (a) signs of dehydration; (b) how long the child has had diarrhoea; and (c) blood in the stool to determine if the child has dysentery.

Clinical assessment

All children with diarrhoea should be checked to determine the duration of diarrhoea, if blood is present in the stool and if dehydration is present. A number of clinical signs are used to determine the level of dehydration:

**Child’s general condition.** Depending on the degree of dehydration, a child with diarrhoea may be lethargic or unconscious (this is also a general danger sign) or look restless/irritable. Only children who cannot be consoled and calmed should be considered restless or irritable.

**Sunken eyes.** The eyes of a dehydrated child may look *sunken*. In a severely malnourished child who is visibly wasted (that is, who has marasmus), the eyes may always look sunken, even if the child is not dehydrated. Even though the sign “sunken eyes” is less reliable in a visibly wasted child, it can still be used to classify the child’s dehydration.

**Child’s reaction when offered to drink.** A child is *not able to drink* if s/he is not able to take fluid in his/her mouth and swallow it. For example, a child may not be able to drink because s/he is lethargic or unconscious. A child is *drinking poorly* if the child is weak and cannot drink without help. S/he may be able to swallow only if fluid is put in his/her mouth. A child has the sign *drinking eagerly, thirsty* if it is clear that the child wants to drink. Notice if the child reaches out for the cup or spoon when you offer him/her water. When the water is taken away, see if the child is unhappy because s/he wants to drink more. If the child takes a drink only with encouragement and does not want to drink more, s/he does not have the sign “drinking eagerly, thirsty.”

**Elasticity of skin.** Check elasticity of skin using the skin pinch test. When released, the skin pinch goes back either *very slowly* (longer than 2 seconds), or *slowly* (skin stays up even for a brief instant), or *immediately*. In a child with marasmus (severe malnutrition), the skin may go back slowly even if the child is not dehydrated. In an overweight child, or a child with oedema, the skin may go back immediately even if the child is dehydrated.

Standard procedures for skin pinch test

- Locate the area on the child’s abdomen halfway between the umbilicus and the side of the abdomen; then pinch the skin using the thumb and first finger.
- The hand should be placed so that when the skin is pinched, the fold of skin will be in a line up and down the child’s body and not across the child’s body.
- It is important to firmly pick up all of the layers of skin and the tissue under them for one second and then release it.

After the child is assessed for dehydration, the caretaker of a child with diarrhoea should be asked how long the child has had diarrhoea and if there is blood in the stool. This will allow identification of children with persistent diarrhoea and dysentery.

Classification of dehydration

Based on a combination of the above clinical signs, children presenting with diarrhoea are classified into three categories:



- Those who have **severe dehydration** and who require immediate IV infusion, nasogastric or oral fluid replacement according to the WHO treatment guidelines described in Plan C (see figure 4 under treatment procedures).

Patients have severe dehydration if they have a fluid deficit equalling greater than 10 percent of their body weight. A child is severely dehydrated if he/she has any combination of two of the following signs: is lethargic or unconscious, is not able to drink or is drinking poorly, has sunken eyes, or a skin pinch goes back very slowly.

Two of the following signs: <ul style="list-style-type: none"><li>● Lethargic or unconscious</li><li>● Sunken eyes</li><li>● Not able to drink or drinking poorly</li><li>● Skin pinch goes back very slowly</li></ul>	SEVERE DEHYDRATION
--	--------------------

- Those who have **some dehydration** and who require active oral treatment with ORS solution according to WHO treatment guidelines described in Plan B (see figure 5 under treatment procedures).

Children who have any combination of the following two signs are included in this group: restless/irritable, sunken eyes, drinks eagerly/thirsty, skin pinch goes back slowly. Children with some dehydration have a fluid deficit equalling 5 to 10 percent of their body weight. This classification includes both “mild” and “moderate” dehydration, which are descriptive terms used in most paediatric textbooks.

Two of the following signs: <ul style="list-style-type: none"><li>● Restless, irritable</li><li>● Sunken eyes</li><li>● Drinks eagerly, thirsty</li><li>● Skin pinch goes back slowly</li></ul>	SOME DEHYDRATION
---	------------------

- Those children with diarrhoea who have **no dehydration**.

Patients with diarrhoea but no signs of dehydration usually have a fluid deficit, but equal to

less than 5 percent of their body weight. Although these children lack distinct signs of dehydration, they should be given more fluid than usual to prevent dehydration from developing as specified in WHO Treatment Plan A (see figure 5 under treatment procedures).

Not enough signs to classify as some or severe dehydration	NO DEHYDRATION
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**Note:** Antibiotics should not be used routinely for treatment of diarrhoea. Most diarrhoeal episodes are caused by agents for which antimicrobials are not effective, e.g., viruses, or by bacteria that must first be cultured to determine their sensitivity to antimicrobials. A culture, however, is costly and requires several days to receive the test results. Moreover, most laboratories are unable to detect many of the important bacterial causes of diarrhoea.

**Note:** Anti-diarrhoeal drugs—including anti-motility agents (e.g., loperamide, diphenoxylate, codeine, tincture of opium), adsorbents (e.g., kaolin, attapulgate, smectite), live bacterial cultures (e.g., Lactobacillus, Streptococcus faecium), and charcoal—**do not** provide practical benefits for children with acute diarrhoea, and some may have dangerous side effects. These drugs should never be given to children less than 5 years old.

Classification of persistent diarrhoea

Persistent diarrhoea is an episode of diarrhoea, with or without blood, which begins acutely and lasts at least 14 days. It accounts for up to 15 percent of all episodes of diarrhoea but is associated with 30 to 50 percent of deaths.<sup>10</sup> Persistent diarrhoea is usually associated with weight loss and often with serious non-intestinal infections. Many children who develop persistent diarrhoea are malnourished,

Persistent diarrhoea accounts for up to 15 percent of all episodes of diarrhoea but is associated with 30 to 50 percent of deaths.

<sup>10</sup>Black RE. Persistent diarrhea in children in developing countries. *Pediatric infectious diseases journal*, 1993, 12:751–761



greatly increasing the risk of death. Persistent diarrhoea almost never occurs in infants who are exclusively breast-fed.

All children with diarrhoea for 14 days or more should be classified based on the presence or absence of any dehydration:

- Children with **severe persistent diarrhoea** who also have any degree of dehydration require special treatment and should not be managed at the outpatient health facility.

Referral to a hospital is required. As a rule, treatment of dehydration should be initiated first, unless there is another severe classification.

● Dehydration present	SEVERE PERSISTENT DIARRHOEA
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- Children with **persistent diarrhoea** and no signs of dehydration can be safely managed in the outpatient clinic, at least initially.

Proper feeding is the most important aspect of treatment for most children with persistent diarrhoea. The goals of nutritional therapy are to: (a) temporarily reduce the amount of animal milk (or lactose) in the diet; (b) provide a sufficient intake of energy, protein, vitamins and minerals to facilitate the repair process in the damaged gut mucus and improve nutritional status; (c) avoid giving foods or drinks that may aggravate the diarrhoea; and (d) ensure adequate food intake during convalescence to correct any malnutrition.

Routine treatment of persistent diarrhoea with antimicrobials is not effective. Some children, however, have non-intestinal (or intestinal) infections that require specific antimicrobial therapy. The persistent diarrhoea of such children will not improve until these infections are diagnosed and treated correctly.

● No dehydration	PERSISTENT DIARRHOEA
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- A child is classified as having **dysentery** if the mother or caretaker reports blood in the child's stool.

● Blood in the stool	DYSENTERY
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It is not necessary to examine the stool or perform laboratory tests to diagnose dysentery. Stool culture, to detect pathogenic bacteria, is rarely possible. Moreover, at least two days are required to obtain the results of a culture. Although “dysentery” is often described as a syndrome of bloody diarrhoea with fever, abdominal cramps, rectal pain and mucoid stools, these features do not always accompany bloody diarrhoea, nor do they necessarily define its aetiology or determine appropriate treatment.

Bloody diarrhoea in young children is usually a sign of invasive enteric infection that carries a substantial risk of serious morbidity and death. About 10 percent of all diarrhoea episodes in children under 5 years old are dysenteric, but these cause up to 15 percent of all diarrhoeal deaths.<sup>11</sup>

Dysentery is especially severe in infants and in children who are undernourished, who develop clinically-evident dehydration during their illness, or who are not breast-fed. It also has a more harmful effect on nutritional status than acute watery diarrhoea. Dysentery occurs with increased frequency and severity in children who have measles or have had measles in the preceding month, and diarrhoeal episodes that begin with dysentery are more likely to become persistent than those that start without blood in the stool.

All children with dysentery (bloody diarrhoea) should be treated promptly with an antibiotic effective against *Shigella* because: (a) bloody diarrhoea in children under 5 is caused much more frequently by *Shigella* than by any other pathogen; (b) shigellosis is more likely than other causes of

About 10 percent of all diarrhoea episodes in children under 5 years old are dysenteric, but these cause up to 15 percent of all diarrhoeal deaths.

<sup>11</sup> The management of bloody diarrhoea in young children. Document WHO/CDD/94.9 Geneva, World Health Organization, 1994

Classification of dysentery

The mother or caretaker of a child with diarrhoea should be asked if there is blood in the stool.



diarrhoea to result in complications and death if effective antimicrobial therapy is not begun promptly; and (c) early treatment of shigellosis with an effective antibiotic substantially reduces the risk of severe morbidity or death.

Fever

ASSESSMENT OF SICK CHILD

History taking

General danger signs

Main symptoms

Cough or difficult breathing

Diarrhoea

Fever

Ear problems

Nutritional status

Immunization status

Other problems

**All** sick children should be checked for fever. Fever is a very common condition and is often the main reason for bringing children to the health centre. It may be caused by minor infections, but may also be the most obvious sign of a life-threatening illness, particularly malaria (especially lethal malaria *P. falciparum*), or other severe infections, including meningitis, typhoid fever, or measles. When diagnostic capacity is limited, it is important first to identify those children who need urgent referral with appropriate pre-referral treatment (antimalarial or antibacterial).

Clinical assessment

Body temperature should be checked in all sick children brought to an outpatient clinic. Children are considered to have fever if their body temperature is above 37.5°C axillary (38°C rectal). In the absence of a thermometer, children are considered to have fever if they feel hot. Fever also may be recognised based on a history of fever.

A child presenting with fever should be assessed for:

**Stiff neck.** A stiff neck may be a sign of meningitis, cerebral malaria or another very severe febrile disease. If the child is conscious and alert, check stuffiness by tickling the feet, asking the child to bend his/her neck to look down or by very gently

bending the child’s head forward. It should move freely.

**Risk of malaria and other endemic infections.** In situations where routine microscopy is not available or the results may be delayed, the risk of malaria transmission must be defined. The World Health Organization (WHO) has proposed definitions of malaria risk settings for countries and areas with risk of malaria caused by *P. falciparum*. A *high malaria risk setting* is defined as a situation in which more than 5 percent of cases of febrile disease in children age 2 to 59 months are malarial disease. A *low malarial risk setting* is a situation where fewer than 5 percent of cases of febrile disease in children age 2 to 59 months are malarial disease, but in which the risk is not negligible. If malaria transmission does not normally occur in the area, and imported malaria is uncommon, the setting is considered to have *no malaria risk*. Malaria risk can vary by season. The national malaria control programme normally defines areas of malaria risk in a country.

If other endemic infections with public health importance for children under 5 are present in the area (e.g., dengue haemorrhagic fever or relapsing fever), their risk should be also considered. In such situations, the national health authorities normally adapt the IMCI clinical guidelines locally.

**Runny nose.** When malaria risk is low, a child with fever and a runny nose does not need an antimalarial. This child’s fever is probably due to a common cold.

**Duration of fever.** Most fevers due to viral illnesses go away within a few days. A fever that has been present every day for more than five days can mean that the child has a more severe disease such as typhoid fever. If the fever has been present for more than five days, it is important to check whether the fever has been present every day.

**Measles.** Considering the high risk of complications and death due to measles, children with fever should be assessed for signs of current or previous measles (within the last three months). Measles deaths occur from pneumonia and laryngotracheitis (67 percent), diarrhoea (25 percent), measles alone, and a few from encephalitis. Other complications (usually nonfatal) include conjunctivitis, otitis media, and mouth ulcers. Significant disability can result from measles including blindness, severe malnutrition, chronic lung



disease (bronchiectasis and recurrent infection), and neurologic dysfunction.<sup>12</sup>

Detection of acute (current) measles is based on fever with a generalised rash, plus at least one of the following signs: red eyes, runny nose, or cough. The mother should be asked about the occurrence of measles within the last three months (recent measles). Despite great success in improving immunization coverage in many countries, substantial numbers of measles cases and deaths continue to occur. Although the vaccine should be given at 9 months of age, immunization often does not take place (because of false contraindications, lack of vaccine, or failure of a cold chain), or is delayed. In addition, many measles cases occur early in a child's life (between 6 and 8 months of age), especially in urban and refugee populations.

If the child has measles currently or within the last three months, s/he should be assessed for possible complications. Measles damages the epithelial surfaces and the immune system, and lowers vitamin A levels. This results in increased susceptibility to infections caused by pneumococcus, gram-negative bacteria, and adenovirus. Recrudescence of herpes virus, Candida, and malaria can also occur during measles infection. It is important to check every child with recent or current measles for possible mouth or eye complications. Other possible complications such as pneumonia, stridor in a calm child, diarrhoea, malnutrition and ear infection are assessed in relevant sections of the IMCI clinical guidelines.

Before classifying fever, check for obvious causes of fever (e.g. ear pain, burn, abscess, etc.).

Classification of fever

■ All children with fever and any general danger sign or stiff neck are classified as having **very severe febrile disease** and should be urgently referred to a hospital after pre-referral treatment with antibiotics (the same choice as for severe pneumonia or very severe disease).

**Note:** In areas where malaria *P.falciparum* is present, such children should also receive a pre-referral dose of an antimalarial (intramuscular quinine).

<sup>12</sup>World Health Organization. *Technical basis for the case management of measles*. Document WHO/EPI/95. Geneva, WHO, 1995.

● Any danger sign or ● Stiff neck	VERY SEVERE FEBRILE DISEASE
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Further classifications will depend on the level of malaria risk in the area.

■ In a **high malaria risk area** or season, children with fever and no general danger sign or stiff neck should be classified as having **malaria**.

Presumptive treatment for malaria should be given to all children who present with fever in the clinic, or who have a history of fever during this illness. Although a substantial number of children will be treated for malaria when in fact they have another febrile illness, presumptive treatment for malaria is justified in this category given the high rate of malaria risk and the possibility that another illness might cause the malaria infection to progress. This recommendation is intended to maximise sensitivity, ensuring that as many true cases as possible receive proper antimalarial treatment.<sup>13</sup>

● Fever (by history or feels hot or temperature 37.5°C or above)	MALARIA
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■ In a **low malaria risk area** or season, children with fever (or history of fever) and no general danger sign or stiff neck are classified as having **malaria** and given an antimalarial only if they have no runny nose (a sign of ARI), no measles, and no other obvious cause of fever (pneumonia, sore throat, etc.).

Evidence of another infection lowers the probability that the child's illness is due to malaria. Therefore, children in a low malaria risk area or season, who have evidence of another infection, should not be given an antimalarial.

● NO runny nose and NO measles and NO other causes of fever	MALARIA
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<sup>13</sup>Management of uncomplicated malaria and the use of antimalarial drugs for the protection of travellers. Report of an informal consultation, Geneva, 18–21 September 1995. Geneva, World Health Organization, 1997 (unpublished document WHO/MAL/96.1075 Rev 1 1997; available on request from Division of Control of Tropical Diseases (CTD)).



- In a **low malaria risk area** or season, children *with* runny nose, measles or clinical signs of other possible causes of fever are classified as having **fever—malaria unlikely**. These children need follow-up. If their fever lasts more than five days, they should be referred for further assessment to determine causes of prolonged pyrexia. If possible, in low malaria risk settings, a simple malaria laboratory test is highly advisable.

<ul style="list-style-type: none"><li>● Runny nose PRESENT or</li><li>● Measles PRESENT or</li><li>● Other causes of fever PRESENT</li></ul>	FEVER – MALARIA UNLIKELY
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- In a **no malaria risk area** or season, an attempt should be made to distinguish cases of possible bacterial infection, which require antibiotic treatment, from cases of non-complicated viral infection. Presence of a runny nose in such situations has no or very little diagnostic value.  
  
When there are obvious causes of fever present—such as pneumonia, ear infection, or sore throat—children could be classified as having **possible bacterial infection** and treated accordingly.

<ul style="list-style-type: none"><li>● Obvious causes of fever</li></ul>	POSSIBLE BACTERIAL INFECTION
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- In a **no malaria risk area** or season, if no clinical signs of obvious infection are found, the working classification becomes **uncomplicated fever**.  
  
Such children should be followed up in two days and assessed further. As in other situations, all children with fever lasting more than five days should be referred for further assessment.

<ul style="list-style-type: none"><li>● NO obvious causes of fever</li></ul>	UNCOMPLICATED FEVER
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**Note:** Children with high fever, defined as an axillary temperature greater than 39.5°C or a rectal greater than 39°C, should be given a single dose of paracetamol to combat hyperthermia.

*Classification of measles*

All children with fever should be checked for signs of current or recent measles (within the last three months) and measles complications.

- **Severe complicated measles** is present when a child with measles displays any general danger sign, or has severe stomatitis with deep and extensive mouth ulcers or severe eye complications, such as clouding of the cornea. These children should be urgently referred to a hospital.

<ul style="list-style-type: none"><li>● Any danger sign; or</li><li>● Clouding of cornea or</li><li>● Deep or extensive mouth ulcers</li></ul>	SEVERE COMPLICATED MEASLES
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- Children with less severe measles complications, such as pus draining from the eye (a sign of conjunctivitis) or non-deep and non-extensive mouth ulcers, are classified as **measles with eye or mouth complications**. These children can be safely treated at the outpatient facility. This treatment includes oral vitamin A, tetracycline ointment for children with pus draining from the eye, and gentian violet for children with mouth ulcers.

Children classified with pneumonia, diarrhoea or ear infection AND measles with eye or mouth complications should be treated for the other classification(s) AND given a vitamin A treatment regimen. Because measles depresses the immune system, these children may be also referred to hospital for treatment.

<ul style="list-style-type: none"><li>● Pus draining from the eye or</li><li>● Mouth ulcers</li></ul>	MEASLES WITH EYE OR MOUTH COMPLICATIONS
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- If no signs of measles complications have been found after a complete examination, a child is classified as having **measles**. These children can be effectively and safely managed at home with vitamin A treatment.

<ul style="list-style-type: none"><li>● Measles now or within the last three months</li></ul>	MEASLES
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Ear problems

ASSESSMENT OF SICK CHILD

History taking ☐

General danger signs ☐

Main symptoms ☒

Cough or difficult breathing ☐

Diarrhoea ☐

Fever ☐

Ear problems ☒

Nutritional status ☐

Immunization status ☐

Other problems ☐

Ear problems are the next condition that should be checked in all children brought to the outpatient health facility. A child presenting with an ear problem should first be assessed for general danger signs, cough or difficult breathing, diarrhoea and fever. A child with an ear problem may have an ear infection. Although ear infections rarely cause death, they are the main cause of deafness in low-income areas, which in turn leads to learning problems .

Clinical assessment

When otoscopy is not available, look for the following simple clinical signs:

**Tender swelling behind the ear.** The most serious complication of an ear infection is a deep infection in the mastoid bone. It usually manifests with tender swelling behind one of the child’s ears. In infants, this tender swelling also may be above the ear. When both tenderness and swelling are present, the sign is considered positive and should not be mistaken for swollen lymph nodes.

**Ear pain.** In the early stages of acute otitis, a child may have ear pain, which usually causes the child to become irritable and rub the ear frequently.

**Ear discharge or pus.** This is another important sign of an ear infection. When a mother reports an ear discharge, the health care provider should check for pus drainage from the ears and find out how long the discharge has been present.

Classification of ear problems

Based on the simple clinical signs above, the child’s condition can be classified in the following ways:

- Children presenting with tenderness and swelling of the mastoid bone are classified as having **mastoiditis** and should be referred to the hospital for treatment. Before referral, these children first should receive a dose of antibiotic and a single dose of paracetamol for pain.

● Tender swelling behind the ear	MASTOIDITIS
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- Children with ear pain or ear discharge (or pus) for fewer than 14 days are classified as having **acute ear infection** and should be treated for five days with the same first-line antibiotic as for pneumonia.

● Ear discharge for fewer than 14 days or ● Ear pain	ACUTE EAR INFECTION
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- If there is ear discharge (or pus) for more than 14 days, the child’s classification is **chronic ear infection**. Dry the ear by wicking. Generally, antibiotics are not recommended because they are expensive and their efficacy is not proven.

● Ear discharge for more than 14 days	CHRONIC EAR INFECTION
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- If no signs of ear infection are found, children are classified as having **no ear infection** and do not require any specific treatment.

● NO ear pain and NO ear discharge seen draining from the ear	NO EAR INFECTION
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Checking nutritional status—malnutrition and anaemia

After assessing for general danger signs and the four main symptoms, **all** children should be assessed for malnutrition and anaemia. There are two main reasons for routine assessment of nutritional status in sick children: (1) to identify children with severe malnutrition who are at increased risk of mortality and need urgent referral to provide active treatment; and (2) to identify children with



- History taking ☐
- General danger signs ☐
- Main symptoms ☐
- Cough or difficult breathing ☐
- Diarrhoea ☐
- Fever ☐
- Ear problems ☐
- Nutritional status ☒
- Immunization status ☐
- Other problems ☐

sub-optimal growth resulting from ongoing deficits in dietary intake plus repeated episodes of infection (stunting), and who may benefit from nutritional counselling and resolution of feeding problems. All children also should be assessed for anaemia.

### Clinical assessment

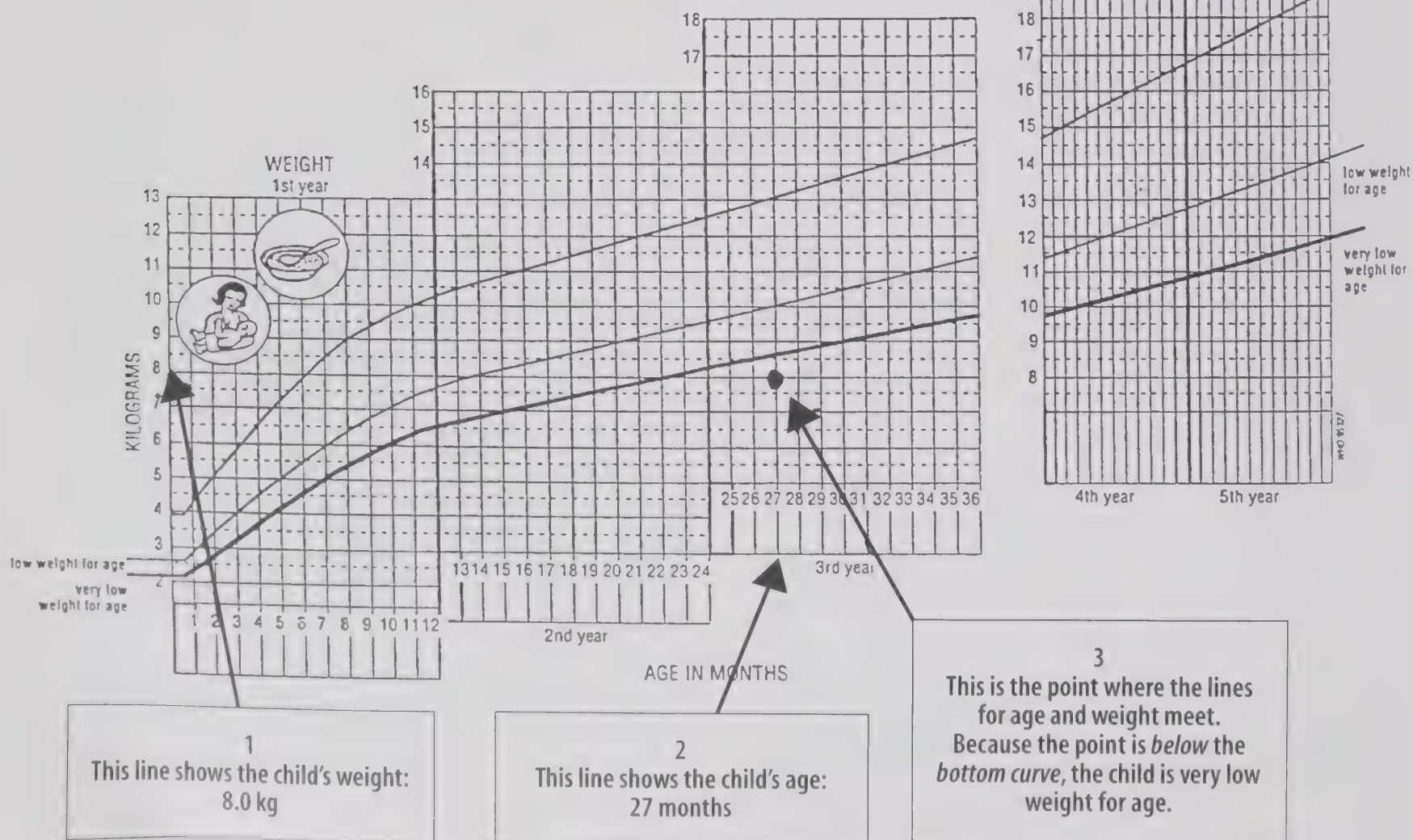
Because reliable height boards are difficult to find in most outpatient health facilities, nutritional status should be assessed by looking and feeling for the following clinical signs:

**Visible severe wasting.** This is defined as severe wasting of the shoulders, arms, buttocks, and legs, with ribs easily seen, and indicates presence of marasmus.

**Oedema of both feet.** The presence of oedema (accumulation of fluid) in both feet may signal kwashiorkor. Children with oedema of both feet may have other diseases like nephrotic syndrome, however, there is no need to differentiate these other conditions in the outpatient settings because referral is necessary in any case.

**Weight for age.** When height boards are not available in outpatient settings, a weight for age indicator (a standard WHO or national growth chart) helps to identify children with low (Z score less than -2) or very low (Z score less than -3) weight for age who are at increased risk of infection and poor growth and development.

**Palmar pallor.** Although this clinical sign is less specific than many other clinical signs included in IMCI guidelines, it can allow doctors to identify sick children with severe anaemia often caused by





malaria infection. Where feasible, the specificity of anaemia diagnosis may be greatly increased by using a simple laboratory test (e.g., the Hb test).

### Classification of nutritional status and anaemia

Using a combination of the simple clinical signs above, a health care provider can classify children in one of the following categories:

- Children with **severe malnutrition or severe anaemia** (exhibiting visible severe wasting, or severe palmar pallor or oedema of both feet) are at high risk of death from various severe diseases and need urgent referral to a hospital where their treatment (special feeding, anti-biotics or blood transfusions, etc.) can be carefully monitored.

<ul style="list-style-type: none"> <li>● Visible severe wasting or</li> <li>● Severe palmar pallor or</li> <li>● Oedema of both feet</li> </ul>	SEVERE MALNUTRITION OR SEVERE ANAEMIA
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- Children with **anaemia or low (or very low) weight** for age also have a higher risk of severe disease and should be assessed for feeding problems. This assessment should identify common, important problems with feeding that feasibly can be corrected if the caretaker is provided effective counselling and acceptable feeding recommendations based on the child's age.

When children are classified as having **anaemia** they should be treated with oral iron. During treatment, the child should be seen every two weeks (follow-up), at which time an additional 14 days of iron treatment is given. If there is no response in pallor after two months, the child should be referred to the hospital for further assessment. Iron is not given to children with severe malnutrition who will be referred. In areas where there is evidence that hookworm, whipworm, and ascaris are the main causes and contributors to anaemia and malnutrition, regular deworming with mebendazole every four to six months is recommended. Mebendazole is inexpensive and safe in young children.

<ul style="list-style-type: none"> <li>● Some palmar pallor or</li> <li>● (Very) low weight for age</li> </ul>	ANAEMIA OR (VERY) LOW WEIGHT
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- Children who are not low (or very low) weight for age and who show no other signs of malnutrition are classified as having **no anaemia and not very low weight**. Because children less than 2 years old have a higher risk of feeding problems and malnutrition than older children do, their feeding should be assessed. If problems are identified, the mother needs to be counselled about feeding her child according to the recommended national IMCI clinical guidelines (see following section).

<ul style="list-style-type: none"> <li>● NOT (very) low weight for age and no other signs of malnutrition</li> </ul>	NO ANAEMIA AND NOT (VERY) LOW WEIGHT
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### Assessing the child's feeding

All children *less than 2 years old* and all children classified as **anaemia or low (or very low) weight** need to be assessed for feeding.

Feeding assessment includes questioning the mother or caretaker about: (1) breastfeeding frequency and night feeds; (2) types of complimentary foods

or fluids, frequency of feeding and whether feeding is active; and (3) feeding patterns during the current illness. The mother or caretaker should be given appropriate advice to help overcome any feeding problems found (for more details, refer to the section on counselling the mother or caretaker).

All children under age 2 should have a feeding assessment, even if they have a normal Z-score.

### Checking immunization status

#### ASSESSMENT OF SICK CHILD

- History taking ☐
- General danger signs ☐
- Main symptoms ☐
- Cough or difficult breathing ☐
- Diarrhoea ☐
- Fever ☐
- Ear problems ☐
- Nutritional status ☐
- Immunization status ☒
- Other problems ☐



The immunization status of *every sick child* brought to a health facility should be checked. Illness is not a contraindication to immunization. In practice, sick children may be even more in need of protection provided by immunization than well children. A vaccine’s ability to protect is not diminished in sick children.

As a rule, there are only four common situations that are contraindications to immunization of sick children:

- Children who are *being referred* urgently to the hospital should not be immunized. There is no medical contraindication, but if the child dies, the vaccine may be incorrectly blamed for the death.
- **Live vaccines** (BCG, measles, polio, yellow fever) should not be given to children with immunodeficiency diseases, or to children who are immunosuppressed due to malignant disease, therapy with immunosuppressive agents or irradiation. However, all the vaccines, including BCG and yellow fever, can be given to children who have, or are suspected of having, HIV infection but are not yet symptomatic.
- **DPT2 / DPT3** should not be given to children who have had convulsions or shock within three days of a previous dose of DPT. DT can be administered instead of DPT.
- **DPT** should not be given to children with recurrent convulsions or another active neurological disease of the central nervous system. DT can be administered instead of DPT.

Illness is not a contraindication to immunization. A vaccine’s ability to protect is not diminished in sick children.

Assessing other problems

The IMCI clinical guidelines focus on five main symptoms. In addition, the assessment steps within each main symptom take into account several other common problems. For example, conditions such as meningitis, sepsis, tuberculosis, conjunctivitis, and different causes of fever such as ear infection and sore throat are routinely assessed within the IMCI case management process. If the guidelines are correctly applied, children with these condi-

ASSESSMENT OF SICK CHILD

History taking ☐

General danger signs ☐

Main symptoms ☐

Cough or difficult breathing ☐

Diarrhoea ☐

Fever ☐

Ear problems ☐

Nutritional status ☐

Immunization status ☐

Other problems ☒

tions will receive presumptive treatment or urgent referral.

Nevertheless, health care providers still need to consider other causes of severe or acute illness. It is important to address the child’s other complaints and to ask questions about the caretaker’s health (usually, the mother’s). Depending on a specific country’s situation, other unique questions may be raised. For example, in countries where vitamin A deficiency is a problem, sick child encounters should be used as an opportunity to update vitamin A supplementation.

Treatment procedures for sick children

IMCI classifications are not necessarily specific diagnoses, but they indicate what action needs to be taken. In the IMCI guidelines, all classifications are colour coded: pink calls for hospital referral or admission, yellow for initiation of treatment, and green means that the child can be sent home with careful advice on when to return. After completion of the assessment and classification procedure, the next step is to identify treatment.

Referral of children age 2 months up to 5 years

*All infants and children with a severe classification (pink) are referred to a hospital* as soon as assessment is completed and necessary pre-referral treatment is administered. Conditions requiring urgent referral are listed in Figure 4.

**Note:** If a child only has severe dehydration and no other severe classification, and IV infusion is available in the outpatient clinic, an attempt should be made to rehydrate the sick child.



Successful referral of severely ill children to the hospital depends on effective counselling of the caretaker. If s/he does not accept referral, available options (to treat the child by repeated clinic or home visits) should be considered. If the caretaker accepts referral, s/he should be given a short, clear referral note, and should get information on what to do during referral transport, particularly if the hospital is distant.

#### The referral note should include:

- Name and age of the child;
- Date and time of referral;
- Description of the child's problems;
- Reason for referral (symptoms and signs leading to severe classification);
- Treatment that has been given;
- Any other information that the referral health facility needs to know in order to care for the child, such as earlier treatment of the illness or any immunizations needed.

#### Urgent pre-referral treatments for children age 2 months up to 5 years (see Figure 4)

- Appropriate antibiotic
- Quinine (for severe malaria)
- Vitamin A
- Prevention of hypoglycemia with breastmilk or sugar water
- Oral antimalarial
- Paracetamol for high fever (38.5°C or above) or pain
- Tetracycline eye ointment (if clouding of the cornea or pus draining from eye)
- ORS solution so that the mother can give frequent sips on the way to the hospital

**Note:** The first four treatments above are urgent because they can prevent serious consequences such as progression of bacterial meningitis or cerebral malaria, corneal rupture due to lack of vitamin A, or brain damage from low blood sugar. The other listed treatments are also important to prevent worsening of the illness.

**Non-urgent treatments**, e.g., wicking a draining ear or providing oral iron treatment, should be deferred to avoid delaying referral or confusing the caretaker.

If a child does not need **urgent** referral, check to see if the child needs **non-urgent referral** for further assessment; for example, for a cough that has lasted more than 30 days, or for fever that has lasted five days or more. These referrals are not as urgent, and other necessary treatments may be done before transporting for referral.

### Treatment in outpatient clinics

The treatment associated with each non-referral classification (**yellow and green**) is clearly spelled out in the IMCI guidelines. Treatment uses a minimum of affordable essential drugs (see Figure 5).

#### Oral drugs

Always start with a first-line drug. These are usually less expensive, more readily available in a given country, and easier to administer. Give a second-line drug (which are usually more expensive and more difficult to obtain) only if a first-line drug is not available, or if the child's illness does not respond to the first-line drug. The health care provider also needs to teach the mother or caretaker how to give oral drugs at home.

■ **Oral antibiotics.** The IMCI chart shows *how many days* and *how many times* each day to give the antibiotic. Most antibiotics should be given for five days. Only cholera cases receive antibiotics for three days. The number of times to give the antibiotic each day varies (two, three or four times per day). Determine the correct dose of antibiotic based on the child's weight. If the child's weight is not available, use the child's age. Always check if the same antibiotic can be used for treatment of different classifications a child may have. For example, the same antibiotic could be used to treat both *pneumonia* and *acute ear infection*.

■ **Oral antimalarials.** Oral antimalarials vary by country. Chloroquine and sulfadoxine-pyrimethamine are the first-line and second-line drugs used in many countries. Chloroquine is given for three days. The dose is reduced on the third day unless the child weighs less than



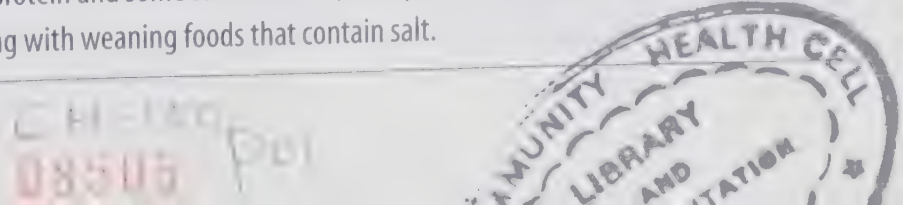
Figure 4. Urgent pre-referral treatments for the sick child from age 2 months up to 5 years

CLASSIFICATION	TREATMENT
	<b>For all children before referral:</b> Prevent low blood sugar by giving breastmilk or sugar water.
DANGER SIGN–CONVULSIONS	If the child is convulsing, give diazepam (10 mg/2 ml solution) in dose 0.1 ml/kg or paraldehyde in dose 0.3–0.4 ml/kg rectally; if convulsions continue after 10 minutes, give a second dose of diazepam rectally.
SEVERE PNEUMONIA OR VERY SEVERE DISEASE	Give first dose of an appropriate antibiotic. Two recommended choices are cotrimoxazole and amoxicillin. If the child cannot take an oral antibiotic (children in shock or those who are vomiting incessantly or are unconscious), give the first dose of intramuscular chloramphenicol (40 mg/kg). Options for an intramuscular antibiotic for pre-referral use include benzylpenicillin and ceftriaxone.
VERY SEVERE FEBRILE DISEASE	Give one dose of paracetamol for high fever (38.5 °C or above). Give first dose of intramuscular quinine for severe malaria unless no malaria risk. Give first dose of an appropriate antibiotic.
SEVERE COMPLICATED MEASLES	Give first dose of appropriate antibiotic. Give vitamin A. If there is clouding of the cornea or pus draining from the eye, apply tetracycline eye ointment.
SEVERE DEHYDRATION	<b>WHO TREATMENT PLAN C</b> If there is no other severe classification, IV fluids should be given in the outpatient clinic according to WHO Treatment Plan C. Give 100 ml/kg IV fluids. Ringer’s lactate solution is the preferred commercially available solution. Normal saline does not correct acidosis or replace potassium losses, but can be used. Plain glucose or dextrose solutions are not acceptable for the treatment of severe dehydration.  If IV infusion is not possible, urgent referral to the hospital for IV treatment is recommended. When referral takes more than 30 minutes, fluids should be given by nasogastric tube. If none of these are possible and the child can drink, ORS must be given by mouth.  <b>Note:</b> In areas where cholera cannot be excluded for patients less than 2 years old with severe dehydration, antibiotics are recommended. Two recommended choices are cotrimoxazole and tetracycline.
SEVERE PERSISTENT DIARRHOEA	If there is no other severe classification, treat dehydration before referral using WHO Treatment Plan B for some dehydration and Plan C for severe dehydration. Then refer to hospital.
MASTOIDITIS	Give first dose of an appropriate antibiotic. Two recommended choices are cotrimoxazole and amoxicillin. If the child cannot take an oral antibiotic (children in shock or those who are vomiting incessantly or who are unconscious), give the first dose of intramuscular chloramphenicol (40 mg/kg). Options for an intramuscular antibiotic for pre-referral use include benzylpenicillin and ceftriaxone.  Give first dose of paracetamol for pain.
SEVERE MALNUTRITION OR SEVERE ANAEMIA	Give first dose of vitamin A.



Figure 5. Treatment in the outpatient health facility of the sick child from age 2 months up to 5 years

CLASSIFICATION	TREATMENT
PNEUMONIA	<p>Give appropriate antibiotic for five days.</p> <p>The choice of antibiotic is based on the fact that most childhood pneumonia of bacterial origin is due to <i>Streptococcus pneumoniae</i> or <i>Haemophilus influenzae</i>. The treatment of non-severe pneumonia can utilise a five-day course of either oral cotrimoxazole or amoxicillin. These two oral antibiotics are usually effective treatment for these two bacteria, both are relatively inexpensive, widely available, and are on the essential drug list of most countries. [The advantages of cotrimoxazole are that it is used twice a day, is affordable and compliance is good. It has been shown that with a twice-daily dosing, compliance levels can reach 75 percent or higher. Amoxicillin is almost twice as expensive as cotrimoxazole and standard dosages are usually given three times a day. The compliance with three-times-a-day dosing is about 60 percent or less.]</p> <p>Soothe the throat and relieve the cough with a safe remedy.</p>
NO PNEUMONIA – COUGH OR COLD	<p>Soothe the throat and relieve the cough with a safe remedy.</p>
SOME DEHYDRATION	<p><b>WHO Treatment Plan B</b></p> <p>Give initial treatment with ORS over a period of four hours. The approximate amount of ORS required (in ml) can be calculated by multiplying the child's weight (in kg) times 75; during these four hours, the mother slowly gives the recommended amount of ORS by spoonfuls or sips. Note: If the child is breast-fed, breast-feeding should continue.</p> <p>After four hours, the child is reassessed and reclassified for dehydration, and feeding should begin; resuming feeding early is important to provide required amounts of potassium and glucose.</p> <p>When there are no signs of dehydration, the child is put on Plan A. If there is still some dehydration, Plan B should be repeated. If the child now has severe dehydration, the child should be put on Plan C.</p>
NO DEHYDRATION	<p><b>WHO Treatment Plan A</b></p> <p>Plan A focuses on the three rules of home treatment: give extra fluids, continue feeding, and advise the caretaker when to return to the doctor (if the child develops blood in the stool, drinks poorly, becomes sicker, or is not better in three days).</p> <p>Fluids should be given as soon as diarrhoea starts; the child should take as much as s/he wants. Correct home therapy can prevent dehydration in many cases. ORS may be used at home to prevent dehydration. However, other fluids that are commonly available in the home may be less costly, more convenient and almost as effective. Most fluids that a child normally takes can also be used for home therapy especially when given with food.</p> <p><b>Recommended home fluid should be:</b></p> <ul style="list-style-type: none"><li>■ <b>Safe when given in large volumes.</b> Very sweet tea, soft drinks, and sweetened fruit drinks should be avoided. These are often hyperosmolar owing to their high sugar content (less than 300 mOsm/L). They can cause osmotic diarrhoea, worsening dehydration and hyponatremia. Also to be avoided are fluids with purgative action and stimulants (e.g., coffee, some medicinal teas or infusions).</li><li>■ <b>Easy to prepare.</b> The recipe should be familiar and its preparation should not require much effort or time. The required ingredients and measuring utensils should be readily available and inexpensive.</li><li>■ <b>Acceptable.</b> The fluid should be one that the mother is willing to give freely to a child with diarrhoea and that the child will readily accept.</li><li>■ <b>Effective.</b> Fluids that are safe are also effective. Most effective are fluids that contain carbohydrates and protein and some salt. However, nearly the same result is obtained when fluids are given freely along with weaning foods that contain salt.</li></ul>





PERSISTENT DIARRHOEA	<p>Encourage the mother to continue breastfeeding.</p> <p>If yoghurt is available, give it in place of any animal milk usually taken by the child; yoghurt contains less lactose and is better tolerated. If animal milk must be given, limit it to 50 ml/kg per day; greater amounts may aggravate the diarrhoea.</p> <p>If milk is given, mix it with the child's cereal and do not dilute the milk. At least half of the child's energy intake should come from foods other than milk or milk products. Foods that are hyperosmolar (these are usually foods or drinks made very sweet by the addition of sucrose, such as soft drinks or commercial fruit drinks) should be avoided. They can worsen diarrhoea.</p> <p>Food needs to be given in frequent, small meals, at least six times a day. All children with persistent diarrhoea should receive supplementary multivitamins and minerals (copper, iron, magnesium, zinc) each day for two weeks.</p>
DYSENTERY	<p>The four key elements of dysentery treatment are:</p> <ul style="list-style-type: none"><li>Antibiotics</li><li>Fluids</li><li>Feeding</li><li>Follow-up</li></ul> <p>Selection of an antibiotic is based on sensitivity patterns of strains of <i>Shigella</i> isolated in the area (nalidixic acid is the drug of choice in many areas). Recommended duration of treatment is five days. If after two days (during follow-up) there is no improvement, the antibiotic should be stopped and a different one used.</p>
MALARIA	<p>Give an oral antimalarial drug. The selection of first-line and second-line treatment for <i>P.falciparum</i> malaria in endemic countries is an important decision made by health regulating authorities (e.g., Ministry of Health) based on information and technical advice provided by malaria control programmes. Generic IMCI guidelines suggest that chloroquine is the first-line and sulfadoxine-pyrimethamine is the second-line antimalarial.</p> <p>Give one dose of paracetamol for high fever (38.5°C or above).</p>
FEVER—MALARIA UNLIKELY POSSIBLE BACTERIAL INFECTION UNCOMPLICATED FEVER	<p>Give one dose of paracetamol for high fever (38.5°C or above).</p> <p>Treat other obvious causes of fever.</p>
MEASLES WITH EYE OR MOUTH COMPLICATIONS	<p>Give first dose of Vitamin A. If clouding of cornea or pus draining from the eye, apply tetracycline eye ointment. If mouth ulcers, treat with gentian violet.</p>
MEASLES CURRENTLY (OR WITHIN THE LAST 3 MONTHS)	<p>Give first dose of Vitamin A.</p>
ACUTE EAR INFECTION	<p>Give appropriate antibiotic for five days.</p> <p>Give one dose of paracetamol for pain.</p> <p>Dry the ear by wicking.</p>
CHRONIC EAR INFECTION	<p>Dry the ear by wicking.</p>
ANAEMIA OR LOW WEIGHT	<p>Assess the child's feeding and counsel the mother accordingly on feeding.</p> <p>If pallor is present: give iron; give oral antimalarial if high malaria risk. In areas where hookworm or whipworm is a problem, give mebendazole if the child is 2 years or older and has not had a dose in the previous six months.</p>
NO ANAEMIA AND NOT LOW WEIGHT	<p>If the child is less than 2 years old, assess the child's feeding and counsel the mother accordingly on feeding.</p>



10 kg. If this is a case, the child should be given the same dose on all three days.

■ **Paracetamol.** If a child has a high fever, give one dose of paracetamol in the clinic. If the child has ear pain, give the mother enough paracetamol for one day, that is, four doses. Tell her to give one dose every six hours or until the ear pain is gone.

■ **Iron.** A child with *anaemia* needs iron. Give syrup to the child under 12 months of age. If the child is 12 months or older, give iron tablets. Give the mother enough iron for 14 days. Tell her to give her child one dose daily for those 14 days. Ask her to return for more iron in 14 days. Also tell her that the iron may make the child's stools black.

**Note:** If a child with some pallor is receiving the antimalarial sulfadoxine-pyrimethamine (Fansidar), do not give iron/folate tablets until a follow-up visit in two weeks. The iron/folate may interfere with the action of the sulfadoxine-pyrimethamine that contains antifolate drugs. If an iron syrup does not contain folate, a child can be given an iron syrup with sulfadoxine-pyrimethamine.

■ **Antihelminth drug.** If hookworm or whipworm is a problem in the area, an anaemic child who is 2 years of age or older may need mebendazole. These infections contribute to anaemia because of iron loss through intestinal bleeding. Give 500 mg of mebendazole as a single dose in the clinic.

■ **Vitamin A.** Vitamin A is given to a child with *measles* or *severe malnutrition*. Vitamin A helps resist the measles virus infection in the eye as well as in the layer of cells that line the lung, gut, mouth and throat. It may also help the immune system to prevent other infections. Vitamin A is available in capsule and syrup form. Use the child's age to determine the dose, and give two doses. Give the first dose to the child in the clinic. Give the second dose to the mother to give her child the next day at home. Every dose of Vitamin A should be recorded because of danger of an overdose.

■ **Safe remedy for cough and cold.** There is no evidence that commercial cough and cold remedies are any more effective than simple home remedies in relieving a cough or soothing a sore

throat. Suppression of a cough is not desirable because cough is a physiological reflex to eliminate lower respiratory tract secretion. Breastmilk alone is a good soothing remedy.

### Treatment of local infections

If the child, age 2 months up to 5 years, has a local infection, the mother or caretaker should be taught how to treat the infection at home.

Instructions may be given about how to:

- Treat eye infection with tetracycline eye ointment;
- Dry the ear by wicking to treat ear infection;
- Treat mouth ulcers with gentian violet;
- Soothe the throat and relieve the cough with a safe remedy.

#### Eye treatment for children being referred

If the child will be referred, and the child needs treatment with tetracycline eye ointment, clean the eye gently. Pull down the lower lid. Squirt the first dose of tetracycline eye ointment onto the lower eyelid. The dose is about the size of a grain of rice.

### Counselling a mother or caretaker

A child who is seen at the clinic needs to continue treatment, feeding and fluids at home. The child's mother or caretaker also needs to recognize when the child is not improving, or is becoming sicker. The success of home treatment depends on how well the mother or caretaker knows how to give treatment, understands its importance and knows when to return to a health care provider.

The steps to good communication were listed earlier. Some advice is simple; other advice requires teaching the mother or caretaker **how to do a task**. When you teach a mother how to treat a child, use three basic teaching steps: give information; show an example; let her practice.

When teaching the mother or caretaker: (1) use words that s/he understands; (2) use teaching aids that are familiar; (3) give feedback when s/he practices, praise what was done well and make corrections; (4) allow more practice, if needed; and



(5) encourage the mother or caretaker to ask questions and then answer all questions. Finally, it is important to check the mother’s or caretaker’s understanding.

The content of the actual advice will depend on the child’s condition and classifications. Below are essential elements that should be considered when counselling a mother or caretaker:

- Advise to continue feeding and increase fluids during illness;
- Teach how to give oral drugs or to treat local infection;
- Counsel to solve feeding problems (if any);
- Advise when to return.

**Advise to continue feeding and increase fluids:** The IMCI guidelines give feeding recommendations for different age groups. These feeding recommendations are appropriate both when the child is sick and when the child is healthy. During illness, children’s appetites and thirst may be diminished. However, mothers and caretakers should be counselled to increase fluids and to offer the types of food recommended for the child’s age, as often as recommended, even though a child may take small amounts at each feeding. After illness, good feeding helps make up for weight loss and helps prevent malnutrition. When the child is well, good feeding helps prevent future illness.

**Teach how to give oral drugs or to treat local infection at home:** Simple steps should be followed when teaching a mother or caretaker how to give oral drugs or treat local infections. These steps include: (1) determine the appropriate drugs and dosage for the child’s age or weight; (2) tell the mother or caretaker what the treatment is and why it should be given; (3) demonstrate how to measure a dose; (4) describe the treatment steps; (5) watch the mother or caretaker practise measuring a dose; (6) ask the mother or caretaker to give the dose to the child; (7) explain carefully how, and how often, to do the treatment at home; (8) explain that **ALL** oral drug tablets or syrups must be used to finish the course of treatment, even if the child gets better; (9) check the mother’s or caretaker’s understanding.

**Counsel to solve feeding problems (if any):** Based on the type of problems identified, it is important to give correct advice about the nutrition of the young child both during and after illness. Sound advice that promotes breastfeeding, improved weaning practices with locally appropriate energy- and nutrient-rich foods, and giving nutritious snacks to children 2 years or older, can counter the adverse effect infections have on nutritional status. Specific and appropriate complementary foods should be recommended and the frequency of feeding by age should be explained clearly. Encourage exclusive breastfeeding for the first four months, and if possible, up to six months; discourage use of bottles for children of any age; and provide guidance on how to solve important problems with breastfeeding. The latter includes assessing the adequacy of attachment and suckling. Specific feeding recommendations should be provided for children with persistent diarrhoea. Feeding counselling relevant to identified feeding problems is described in the IMCI national feeding recommendations.

**Advise when to return:** Every mother or caretaker who is taking a sick child home needs to be advised about when to return to a health facility. The health care provider should (a) teach signs that mean to return immediately for further care; (b) advise when to return for a follow-up visit; and (c) schedule the next well-child or immunization visit.

The table below lists the specific times to advise a mother or caretaker to return to a health facility.

A. IMMEDIATELY	
Advise to return immediately if the child has any of these signs.	
Any sick child	<div>■ Not able to drink or drink or breastfeed</div> <div>■ Becomes sicker</div> <div>■ Develops a fever</div>
If child has no pneumonia: cough or cold, also return if:	<div>■ Fast breathing</div> <div>■ Difficult breathing</div>
If child has diarrhoea, also return if:	<div>■ Blood in stool</div> <div>■ Drinking poorly</div>



B. FOR FOLLOW-UP VISIT

If the child has:	Return for follow-up not later than:
Pneumonia	
Dysentery	
Malaria, if fever persists	2 days
Fever malaria unlikely or uncomplicated fever, if fever persists	
Measles with eye or mouth complications	
Persistent diarrhoea	
Acute ear infection	
Chronic ear infection	5 days
Feeding problem	
Any other illness, if not improving	
Pallor	14 days
Low (very low)weight for age	30 days

C. NEXT WELL-CHILD VISIT

Advise when to return for the next immunization according to immunization schedule.

Follow-up care

Some sick children will need to return for follow-up care. At a follow-up visit, see if the child is improving on the drug or other treatment that was prescribed. Some children may not respond to a particular antibiotic or antimalarial, and may need to try a second-line drug. Children with persistent diarrhoea also need follow-up to be sure that the diarrhoea has stopped. Children with fever or eye infection need to be seen if they are not improving. Follow-up is especially important for children with a feeding problem to ensure they are being fed adequately and are gaining weight.

When a child comes for follow-up of an illness, ask the mother or caretaker if the child has developed any *new* problems. If she answers yes, the child requires a full assessment: check for general danger signs and assess all the main symptoms and the child’s nutritional status.

If the child *does not have a new* problem, use the IMCI follow-up instructions for each specific problem:

- Assess the child according to the instructions;
- Use the information about the child’s signs to select the appropriate treatment;
- Give the treatment.

**Note:** If a child who comes for follow-up has several problems and is getting worse, or returns repeatedly with chronic problems that do not respond to treatment, the child should be referred to a hospital.

The IMCI charts contain detailed instructions on how to conduct follow-up visits for different diseases. Follow-up visits are recommended for **sick children classified as having:**

- Dysentery
- Malaria, if fever persists
- Fever – Malaria Unlikely, if fever persists
- Measles with eye or mouth complications
- Persistent diarrhoea
- Acute ear infection
- Chronic ear infection
- Feeding problem
- Pallor
- Very low weight for age
- Any other illness, if not improving



# Outpatient management of young infants age 1 week up to 2 months

## Assessment of sick young infants

While there are similarities in the management of sick young infants (age 1 week up to 2 months) and children (age 2 months up to 5 years), some clinical signs observed in infants differ from those in older children.

The remainder of this chapter covers instances where the management of young infants differs from that of the small child. For example, it is essential to pay attention to the following clinical signs as an infant's illness can progress rapidly to death.

Assessment includes the following steps:

- Checking for possible bacterial infection;
- Assessing if the young infant has diarrhoea;
- Checking for feeding problems or low weight;
- Checking the young infant's immunization status;
- Assessing other problems.

It is important to remember that the guidelines above are not used for a sick new-born who is less than 1 week old. In the first week of life, new-born infants are often sick from conditions related to labour and delivery, or have conditions that require special management. New-borns may be suffering from asphyxia, sepsis from premature ruptured membranes or other intrauterine infection, or birth trauma. Or they may have trouble breathing due to immature lungs. Jaundice also requires special management in the first week of life.

### Note

Important information on use of oral drugs, continued feeding, mother or caretaker counselling, and assessment of immunization and nutrition status can be found in sections of this chapter devoted to treatment of children age 2 months up to 5 years.

## Checking for main symptoms

### Bacterial infection

While the signs of pneumonia and other serious bacterial infections cannot be easily distinguished in this age group, it is recommended that **all** sick young infants be assessed first for signs of possible bacterial infection.

### Clinical assessment

Many clinical signs point to possible bacterial infection in sick young infants. The most informative and easy to check signs are:

**Convulsions** (as part of the current illness). Assess the same as for older children.

**Fast breathing.** Young infants usually breathe faster than older children do. The breathing rate of a healthy young infant is commonly more than 50 breaths per minute. Therefore, 60 breaths per minute is the cut-off rate to identify fast breathing in this age group. If the count is 60 breaths or more, the count should be repeated, because the breathing rate of a young infant is often irregular. The young infant will occasionally stop breathing for a few seconds, followed by a period of faster breathing. If the second count is also 60 breaths or more, the young infant has fast breathing.

**Severe chest indrawing.** Mild chest indrawing is normal in a young infant because of softness of the chest wall. Severe chest indrawing is very deep and easy to see. It is a sign of pneumonia or other serious bacterial infection in a young infant.

**Nasal flaring** (when an infant breathes in) and **grunting** (when an infant breathes out) are an indication of troubled breathing and possible pneumonia.

**A bulging fontanel** (when an infant is not crying), **skin pustules**, **umbilical redness** or **pus draining from the ear** are other signs that indicate possible bacterial infection.



**Lethargy or unconsciousness, or less than normal movement** also indicate a serious condition.

**Temperature (fever or hypothermia)** may equally indicate bacterial infection. Fever (axillary temperature more than 37.5°C or rectal temperature more than 38°C) is uncommon in the first two months of life. Fever in a young infant may indicate a serious bacterial infection, and may be the *only* sign of a serious bacterial infection. Young infants can also respond to infection by dropping their body temperature to below 35.5°C (36°C rectal).

*Classification of possible bacterial infection*

There are two possible classifications for bacterial infection:

- A sick young infant with **possible serious bacterial infection** is one who has any of the following signs: fast breathing, severe chest indrawing, grunting, nasal flaring, bulging fontanel, convulsions, fever, hypothermia, many or severe skin pustules, umbilical redness extending to the skin, pus draining from the ear, lethargy, unconsciousness, or less than normal movement. This infant should be referred urgently to the hospital after being given intramuscular benzylpenicillin (or ampicillin) plus gentamicin, treatment to prevent hypoglycemia, and advice to the mother on keeping the young infant warm.

<ul style="list-style-type: none"><li>● Convulsions or</li><li>● Fast breathing or</li><li>● Severe chest indrawing or</li><li>● Nasal flaring or</li><li>● Grunting or</li><li>● Bulging fontanelle or</li><li>● Pus drainage from ear or</li><li>● Umbilical redness extending to skin or</li><li>● Fever or hypothermia</li><li>● Many or severe skin pustules or</li><li>● Lethargy or unconsciousness or</li><li>● Less than normal movement</li></ul>	POSSIBLE SERIOUS BACTERIAL INFECTION
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- A sick young infant with local bacterial infection is one who has only a few skin pustules or an umbilicus that is red or draining pus, but without redness extending to the skin. This infant may be treated at home with oral antibiotics but should be seen in follow-up in two days.

<ul style="list-style-type: none"><li>● Red umbilicus or draining pus or</li><li>● Skin pustules</li></ul>	LOCAL BACTERIAL INFECTION
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*Diarrhoea*

**All** sick young infants should be checked for diarrhoea.

*Clinical assessment and classification of diarrhoea*

Assessment, classification and management of diarrhoea in sick young infants are similar to those in older children. However, assessing thirst by offering a drink is not reliable, so “drinking poorly” is not used as a sign for the classification of dehydration. In addition, all young infants with persistent diarrhoea or blood in the stool should be referred to the hospital, rather than managed as outpatients.

*Feeding problems or low weight*

**All** sick young infants seen in outpatient health facilities should be assessed for weight and adequate feeding, as well as for breast-feeding technique.

*Clinical assessment*

**Determine weight for age.** Assess the same as for older children.

**Assessment of feeding.** Assessment of feeding in young infants is similar to that in older children. It includes three main types of questions about: (1) breastfeeding frequency and night feeds; (2) types of complimentary foods or fluids, frequency of feeding and whether feeding is active or not; and (3) feeding patterns during this illness.



**Breastfeeding: Signs of good attachment**

- Chin touching breast;
- Mouth wide open;
- Lower lip turned outward; and
- More areola visible above than below the mouth.

If an infant has difficulty feeding, or is breastfed less than 8 times in 24 hours, or taking other foods or drinks, or low weight for age, then breastfeeding should be assessed. Assessment of breastfeeding in young infants includes checking if the infant is able to attach, if the

infant is suckling effectively (slow, deep sucks, with some pausing), and if there are ulcers or white patches in the mouth (thrush).

*Classification of feeding problems or low weight*

Based on an assessment of feeding and weight, a sick young infant may be classified into three categories:

- **Not able to feed – possible serious bacterial infection.** The young infant who is not able to feed, or not attaching to the breast or suckling effectively, has a life-threatening problem. This could be caused by a bacterial infection or another illness. The infant should be referred to a hospital after receiving the same pre-referral treatment as infants with possible serious bacterial infection.

<ul style="list-style-type: none"><li>● Not able to feed or</li><li>● No attachment at all or</li><li>● Not suckling at all</li></ul>	NOT ABLE TO FEED – POSSIBLE BACTERIAL INFECTION
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- Infants with **feeding problems or low weight** are those infants who present with feeding problems like not attaching well to the breast, not suckling effectively, getting breastmilk fewer than eight times in 24 hours, receiving other foods or drinks than breastmilk, or those who have low weight for age or thrush (ulcers/white patches in mouth).

<ul style="list-style-type: none"><li>● Not well attached to breast or</li><li>● Not suckling effectively or</li><li>● Fed fewer than 8 times in 24 hours or</li><li>● Receiving other foods or drinks or</li><li>● Low weight for age</li><li>● Thrush</li></ul>	FEEDING PROBLEMS OR LOW WEIGHT
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Appropriate counselling of the mother should be based on the identified feeding problem: (a) if the infant is not well-attached or not suckling effectively, teach correct positioning and attachment; (b) if the infant is breastfeeding fewer than eight times in 24 hours, advise the mother to increase frequency of feeding; (c) if the infant receives other food or drinks, counsel the mother about breastfeeding more, reducing other foods or drinks, and using a cup; (d) if the mother is not breastfeeding at all, refer for breastfeeding counselling and possible relactation, and advise how to correctly prepare a breastmilk substitute. In infants with thrush, teach the caretaker how to treat thrush at home using gentian violet. Ensure follow-up for any feeding problem or thrush in two days and follow-up low weight for age in 14 days.

- Infants with **no feeding problems** are those who are breastfed exclusively at least eight times in 24 hours and whose weight is not classified as low weight for age according to standard measures.

<ul style="list-style-type: none"><li>● Not low weight for age and no other signs of inadequate feeding</li></ul>	NO FEEDING PROBLEMS
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**Checking immunization status**

As for older children, immunization status should be checked in all sick young infants. Equally, illness is not a contraindication to immunization.

**Note:** Do not give OPV 0 to an infant who is more than 14 days old. If an infant has not received OPV 0 by the time s/he is 15 days old, OPV should be given at age 6 weeks old as OPV 1.



Assessing other problems

As for older children, all sick young infants need to be assessed for other potential problems mentioned by the mother or observed during the examination. If a potentially serious problem is found or there is no means in the clinic to help the infant, s/he should be referred to hospital.

Treatment procedures for sick infants

Referral of young infants age 1 week up to 2 months

The first step is to give urgent pre-referral treatment(s). Possible pre-referral treatments include:

- First dose of intramuscular or oral antibiotics
- Keeping the infant warm on the way to the hospital
- Prevention of hypoglycemia with breastmilk or sugar water
- Frequent sips of ORS solution on the way to the hospital

If an infant does not need **urgent** referral, check to see if the child needs non-urgent referral for further assessment. These referrals are not as

urgent. Any other necessary treatments may be done before referral.

Treatment in outpatient clinics

The treatment instructions for a young infant are given in IMCI guidelines. The antibiotics and dosages are different than those for older children. Exceptions are the fluid plans for treating diarrhoea and the instructions for preventing low blood sugar. WHO Plans A, B, and C and the guidelines on how to prevent low blood sugar are used for young infants as well as older infants and young children.

Oral drugs

The first dose of oral drugs for a young infant should always be given in the clinic. In addition, the mother or caretaker should be taught how to give an oral antibiotic at home. That is, teaching how to measure a single dose, showing how to crush a tablet and mix it with breastmilk, and teaching the treatment schedule.

**Note:** Avoid giving cotrimoxazole to a young infant less than 1 month of age who is premature or jaundiced. Give this infant amoxycillin or benzylpenicillin instead.

Figure 6. Urgent pre-referral treatments for sick young infants age 1 week up to 2 months

CLASSIFICATION	TREATMENT
	<b>For all infants before referral:</b> Prevent low blood sugar by giving breastmilk or sugar water. Advise mother how to keep the infant warm on the way to the hospital.
CONVULSIONS	If the child is convulsing, give diazepam (10 mg/2 ml solution) in dose 0.1 ml/kg or paraldehyde in dose 0.3–0.4 ml/kg rectally; if convulsions continue after 10 minutes, give a second dose of diazepam rectally. Use Phenobarbital (200 mg/ml solution) in a dose of 20 mg/kg to control convulsions in infants under 2 weeks of age.
POSSIBLE SERIOUS BACTERIAL INFECTION AND/OR NOT ABLE TO FEED – POSSIBLE SERIOUS BACTERIAL INFECTION	Give first dose of intramuscular antibiotics. The recommended choices are Gentamicin (2.5 mg/kg) plus benzylpenicillin (50 000 units per kg) OR ceftriaxone OR cefotaxime.
SEVERE DEHYDRATION	See recommendations for older children, figure 4.
DYSENTERY AND/OR SEVERE PERSISTENT DIARRHOEA	See recommendations for older children, figure 4.



Figure 7. Treatment in the outpatient clinic for sick young infants from 1 week up to 2 months

CLASSIFICATION	TREATMENT
LOCAL BACTERIAL INFECTION	Give an appropriate oral antibiotic. The recommended choices are cotrimoxazole and amoxicillin. Treat local infections and teach the mother to do it at home.
SOME DEHYDRATION	See recommendations for older children, figure 5.
NO DEHYDRATION	See recommendations for older children, figure 5.
FEEDING PROBLEM OR LOW WEIGHT	Give appropriate feeding advice. If thrush, teach the mother to treat thrush at home.

Treatment of local infections

There are three types of local infections in a *sick young infant* that a caretaker can treat at home: an umbilicus that is red or draining pus, skin pustules, or thrush. These local infections are treated with gentian violet.

Counselling a mother or caretaker

As with older children, the success of home treatment depends on how well the mother or caretaker knows how to give the treatment, understands its importance, and knows when to return to a health care provider.

Counselling the mother or caretaker of a sick young infant includes the following essential elements:

- Teach how to give oral drugs or to treat local infection.
- Teach correct positioning and attachment for breastfeeding:
  - a) show the mother how to hold her infant
  - b) with the infant’s head and body straight
  - c) facing her breast, with infant’s nose opposite her nipple
  - d) with infant’s body close to her body
  - e) supporting infant’s whole body, not just neck and shoulders.
- Show her how to help the infant to attach. She should:
  - a) touch her infant’s lips with her nipple
  - b) wait until her infant’s mouth is opening wide

- c) move her infant quickly onto her breast, aiming the infant’s lower lip well below the nipple.

- Look for signs of good attachment and effective suckling. If the attachment or suckling is not good, try again.
- Advise about food and fluids: advise to breastfeed frequently, as often as possible and for as long as the infant wants, day and night, during sickness and health.
- Advise when to return:

A. IMMEDIATELY

Advise to return immediately if the infant has any of these signs:

- Breastfeeding or drinking poorly
- Becomes sicker
- Develops a fever
- Fast breathing
- Difficult breathing
- Blood in stool

B. FOR FOLLOW-UP VISIT

If the infant has:	Return for follow-up not later than:
Local bacterial infection	
Any feeding problem	2 days
Thrush	
Low weight for age	14 days

C. NEXT WELL-CHILD VISIT



Advise when to return for the next immunization according to immunization schedule.

### **Follow-up care**

If the child *does not have a new problem*, use the IMCI follow-up instructions for each specific problem:

- Assess the child according to the instructions;
- Use the information about the child's signs to select the appropriate treatment;
- Give the treatment.

IMCI charts contain detailed instructions on how to conduct follow-up visits for different diseases. Follow-up visits are recommended for young infants who are classified as:

- Local bacterial infection
- Feeding problem or low weight (including thrush)

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# Principles of management of sick children in a small hospital

Severely sick children who are referred to a hospital should be further assessed using the expertise and diagnostic capabilities of the hospital setting. However, the first step in assessing children referred to a hospital should be triage—the process of rapid screening to decide in which of the following groups a sick child belongs:

- **Those with emergency signs** who require immediate emergency treatment: obstructed breathing, severe respiratory distress, central cyanosis, signs of shock, coma, convulsions, or signs of severe dehydration.
- **Those with priority signs** who should be given priority while waiting in the queue so they can be assessed and treated without delay: visible severe wasting, oedema of both feet, severe palmar pallor, any sick young infant (less than 2 months), lethargy, continual irritability and restlessness, major burns, any respiratory distress, or urgent referral note from another health facility.
- **Non-urgent cases** that have neither emergency nor priority signs.

Then according to identified priority order, sick children must be examined fully so that no important sign will be missed. The following laboratory investigations need to be available at the small hospital in order to manage sick children:

- Haemoglobin or packed cell volume (PCV)
- Blood smear for malaria
- Blood glucose
- Microscopy of CSF and urine
- Blood grouping and cross-matching

In addition, for sick young infants (under 1 week old), the laboratory investigation for blood bilirubin should be available. Other investigations (such as chest X-ray and stool microscopy) are not considered essential, but could help in complicated cases.

When a child with a severe (pink) classification is admitted to a hospital, a list of possible diagnoses should be drawn up. Remember, a sick child often has more than one diagnosis or clinical problem requiring treatment. The diagnoses in the following table should be considered first for each category.

An appropriate treatment is given to sick children based on the results of the diagnostic procedures and according to the national clinical guidelines. More detailed information about management of children at first-level referral hospitals may be found in the WHO publication titled *Management of the child with a serious infection or severe malnutrition: Guidelines for care at the first-referral level in developing countries* (WHO/FCH/CAH/00.1). In addition to describing the most essential treatment procedures, this document outlines the main principles of monitoring the child's progress. The key aspects in monitoring the progress of a sick child are:

- **Devising a monitoring plan.** The frequency will depend on the nature and severity of the child's clinical condition.
- **Using a standard chart to record essential information** such as correct administration of the treatment, expected progress, possible adverse effects of the treatment, complications that may arise, possible alternative diagnosis.
- **Bringing these problems to the attention of senior staff** and, if necessary, changing the treatment accordingly.



Figure 8. Possible diagnoses of children referred to hospital with four main symptoms

MAIN SYMPTOMS AND POSSIBLE DIAGNOSES			
Unconsciousness, lethargy or convulsions	Cough or difficult breathing	Diarrhoea	Fever
<ul style="list-style-type: none"> <li>● Meningitis</li> <li>● Cerebral malaria (only in children exposed to <i>P. falciparum</i> transmission, often seasonal)</li> <li>● Febrile convulsions (not likely to be cause of unconsciousness)</li> <li>● Hypoglycaemia (always seek the cause)</li> <li>● Head injury</li> <li>● Poisoning</li> <li>● Shock (can cause lethargy or unconsciousness, but is unlikely to cause convulsions)</li> <li>● Acute glomerulonephritis with encephalopathy</li> <li>● Diabetic ketoacidosis</li> </ul> <p>The following are possible diagnoses of young infants referred to the hospital with lethargy:</p> <ul style="list-style-type: none"> <li>● Birth asphyxia, hypoxic ischaemic encephalopathy, birth trauma</li> <li>● Intracranial haemorrhage</li> <li>● Haemolytic disease of the newborn, kernicterus</li> <li>● Neonatal tetanus</li> <li>● Meningitis</li> <li>● Sepsis</li> </ul>	<ul style="list-style-type: none"> <li>● Pneumonia</li> <li>● Malaria</li> <li>● Severe anaemia</li> <li>● Cardiac failure</li> <li>● Congenital heart disease</li> <li>● Tuberculosis</li> <li>● Pertussis foreign body</li> <li>● Empyema</li> <li>● Pneumotorax</li> <li>● Pneumocystis pneumonia</li> </ul>	<ul style="list-style-type: none"> <li>● Acute watery diarrhoea</li> <li>● Cholera</li> <li>● Dysentery</li> <li>● Persistent diarrhoea</li> <li>● Diarrhoea with severe malnutrition</li> <li>● Intussusception</li> </ul>	<ul style="list-style-type: none"> <li>● Malaria</li> <li>● Septicaemia</li> <li>● Typhoid</li> <li>● Urinary tract infection</li> <li>● HIV infection</li> <li>● Meningitis</li> <li>● Otitis media</li> <li>● Osteomyelitis</li> <li>● Septic arthritis</li> <li>● Skin and soft tissue infection</li> <li>● Pneumonia</li> <li>● Viral infections</li> <li>● Throat abscess</li> <li>● Sinusitis</li> <li>● Measles</li> <li>● Meningococcal infection</li> <li>● Relapsing fever</li> <li>● Typhus</li> <li>● Dengue haemorrhagic fever</li> </ul>











# MODEL CHAPTERS FOR TEXTBOOKS

**I n t e g r a t e d  
M a n a g e m e n t o f  
C h i l d h o o d  
I l l n e s s**

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